

CLAIMS

What is claimed is:

1. 1. A method comprising:
 2. reserving a Quality of Service (QoS) resource pool a predetermined portion of available bandwidth between a first network device coupled in communication with a packet network and associated with a first user community and a second network device coupled in communication with the packet network and associated with a second user community for real-time communication sessions among users of the first user community and the second user community; and
 8. providing end-to-end application QoS between the first user community and the second user community by selectively admitting a plurality of real-time communication sessions between the first user community and the second user community based upon currently available resources associated with the QoS resource pool and multiplexing the plurality of real-time communication sessions over a reservation protocol session between the first network device and the second network device.
 1. 2. The method of claim 1, wherein said reserving a predetermined portion of available bandwidth between a first network device associated with a first user community and a second network device associated with a second user community includes pre-allocating the reservation protocol session over a path through the packet network between the first network device and the second network device.
 1. 3. The method of claim 2, wherein the reservation protocol session comprises a Resource Reservation Protocol (RSVP) session.
 1. 4. The method of claim 3, wherein at least one of the plurality of real-time communication sessions includes a H.323 session and a Real-time Transport Protocol (RTP) session.

- 1 5. The method of claim 1, wherein the first user community and the second user
- 2 community comprise subscribers to a long distance carrier.
- 1 6. The method of claim 1, wherein the first user community and the second user
- 2 community comprise employees of an enterprise at a first geographic location and a
- 3 second geographic location, respectively.
- 1 7. The method of claim 1, wherein the packet network comprises the Internet.
- 1 8. The method of claim 1, wherein:
 - 2 a first local network supporting the first user community comprises Internet
 - 3 Protocol (IP) telephony products of a first vendor which are in communication with a
 - 4 first IP private branch exchange (PBX) call management agent; and
 - 5 a second local network supporting the second user community comprises IP
 - 6 telephony products of a second vendor which are in communication with a second IP
 - 7 PBX call management agent.
- 1 9. The method of claim 1, wherein the plurality of real-time communication sessions
- 2 comprise voice over IP (VoIP) calls carrying voice or voice-band data.

1 10. A method comprising:

2 establishing an aggregated reservation protocol session over a path between a
3 first device coupled to a public Internet Protocol (IP) network and a second device
4 coupled to the public IP network; and

5 providing end-to-end Quality of Service (QoS) on behalf of users of a
6 distributed voice over IP environment by (i) selectively admitting a plurality of VoIP
7 calls between those of the users associated with a first user community that access the
8 public IP network via the first device and those of the users associated with a second
9 user community that access the public IP network via the second device based on
10 resources associated with the aggregated reservation protocol session and a desired
11 level of service and (ii) multiplexing the plurality of VoIP calls onto the aggregated
12 reservation protocol session.

- 1 11. A method comprising:
 - 2 establishing a Resource Reservation Protocol (RSVP) session between a first
 - 3 network device and a second network device that are part of a geographically
 - 4 distributed enterprise voice over Internet Protocol (VoIP) network;
 - 5 receiving, at the first network device from a first local terminal, a request to
 - 6 initiate a first VoIP call with a first remote terminal associated with the second
 - 7 network device;
 - 8 allocating a portion of pre-allocated resources associated with the RSVP
 - 9 session to the first VoIP call between the first local terminal and the first remote
 - 10 terminal;
 - 11 receiving, at the first network device from a second local terminal, a request to
 - 12 initiate a second VoIP call with a second remote terminal associated with the second
 - 13 network device;
 - 14 allocating a portion of the pre-allocated resources associated with the RSVP
 - 15 session to the second VoIP call between the second local terminal and the second
 - 16 remote terminal; and
 - 17 providing a desired level of Quality of Service (QoS) to both the first VoIP call
 - 18 and the second VoIP call by sharing the RSVP session between the first VoIP call and
 - 19 the second VoIP call by multiplexing packets containing voice or voice-band data
 - 20 associated with the first and second VoIP calls onto the RSVP session.

- 1 12. The method of claim 11, further comprising:
 - 2 transmitting packets from the first local terminal and first remote terminal by
 - 3 forming an encapsulated packet at the first network device that includes tag
 - 4 information to allow the second network device to determine the packets are intended
 - 5 for the first remote terminal; and
 - 6 removing the tag information at the second network device prior to forwarding
 - 7 the packets to the first remote terminal.
- 1 13. The method of claim 12, wherein the tag information includes the IP address of the
- 2 first local terminal.
- 1 14. The method of claim 12, wherein the tag information includes the IP address of the
- 2 first remote terminal.
- 1 15. The method of claim 12, wherein the tag information includes a packet type indicator
- 2 that specifies how to further identify a subprocess within the first remote terminal.
- 1 16. The method of claim 11 wherein the first local terminal and the first remote terminal
- 2 comprise IP phones.
- 1 17. The method of claim 11 wherein the first local terminal and the first remote terminal
- 2 comprise computer systems running an Internet telephony application.

- 1 18. A media aggregation manager comprising:
 - 2 a resource manager to establish a reservation protocol session with one or
 - 3 more other media aggregation managers prior to establishment of any application
 - 4 sessions that share resources associated with the reservation protocol and to
 - 5 subsequently allocate and deallocate the resources in response to application session
 - 6 establishment requests and application session termination requests, respectively;
 - 7 an admission control manager coupled to the resource manager, the admission
 - 8 control manager to provide admission control for application flows based upon
 - 9 availability of the resources as indicated by the resource manager;
 - 10 a media multiplexor coupled to the admission control manager, the media
 - 11 multiplexor to tag media packets received from local application/endpoints that are
 - 12 associated with admitted application flows and to transmit the tagged media packets
 - 13 over the reservation protocol session;
 - 14 a media demultiplexor to forward media packets received from remote
 - 15 application/endpoints to the local application/endpoints based upon tags appended by
 - 16 a media multiplexor of the one or more other media aggregation managers; and
 - 17 a signaling gateway to perform signaling/media translation, if necessary,
 - 18 among a first signaling protocol employed by a first Voice over Internet Protocol
 - 19 (VoIP) environment in which the media aggregation manager is to operate and one or
 - 20 more signaling protocols employed by VoIP environments in which the one or more
 - 21 other media aggregation managers operate.